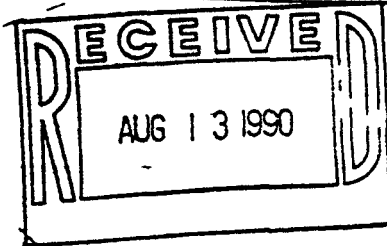


Rocky Flats Cleanup Commission

738 WYNKOOP SUITE 302
DENVER, COLORADO 80202
(303) 298-8001



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Denver 757-9931

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Denver 321 7276

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Denver 333-9714

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Boulder 494-4288

M. Carson Ph.D

Lakewood 980-2371

Dennis O'Donoghue

Golden 342 3117

Frederick J. D.

Boulder 44-8133

K. M. R. G.

Westminster 400-1111

Sue Hurs

Denver 530 7795

William Kimpel Ph.D

Denver 338-2148

Ken Lich

MD Denver 333-3077

Tom Rauch

Denver 832-4508

Mr. Phil Warner

IGC

Rocky Flats Plant

P.O. Box 64

Golden CO 80402-0064



000019169

August 10 1990

Dear Mr. Warner

The Rocky Flats Cleanup Commission is transmitting two sets of comments related to the cleanup of Hillside 881. The first set is a response to our letter of July 1, 1990 in which you tried to respond to questions we raised at the 881 briefing on June 14. The second set of comments and questions was prepared by our technical consultant, Slocum and Company, regarding the 881 Hillside Cleanup Plan dated January 1990. As you read these comments you will soon realize that we still have major concerns for the health and safety of the worker and the community during the cleanup of Hillside 881. We would appreciate more thorough answers to our questions than we have received thus far. If you have any questions please call me at 757-9971.

Sincerely,

Joe Timpel
Joe Timpel

cc J. Kersh
M. Hestmark
R. Nelson
J. Palomba
J. Hearne
Conway

ADMIN RECORD

A-0001-000750

DRAFT COMMENTS
ON THE
ENVIRONMENTAL ASSESSMENT FOR THE 881 HILLSIDE
HIGH PRIORITY SITES

INTERIM REMEDIAL ACTION

by Slosky and Company
June 5 1990

. INTRODUCTION

The comments on the Environmental Assessment for 881 Hillside (High Priority Sites) Interim Remedial Action DOE/EA-0413 U.S. Department of Energy Rocky Flats Plant January 1990 (EA) are divided into seven sections

- o General
- o Water Quality
- o Water Treatment System
- o Air Quality
- o Soils/Vegetation
- o Risk Assessment
- o Radiation Protection

This review is being conducted to assess whether the EA identifies and characterizes the significant environmental impacts of the proposed action and adheres to the Risk Assessment Guidance for Superfund Volume I. Human Health Evaluation Manual Interim Final U.S. Environmental Protection Agency December 1989

The EA is an analysis document based upon data contained in several other documents. Due to resource constraints it was not possible to examine any of the source documents for the EA so there has not been an opportunity to ascertain independently that the summaries of data and the associated data collection methods presented in this document are correct and complete. Therefore for the purpose of this review it was necessary to assume that all statements of fact (e.g. the data summary in Table 2-1 and descriptions of alternative actions) are correct and sufficiently complete to permit an informed opinion. Because of this limitation it is possible that some of the comments below have been addressed in the source documents such as the Interim Measures/Interim Remedial Action Plan and Decision Document/881 Hillside Area/Operable Unit No. 1 (referred to as the IM/IRA) the Draft Remedial Investigation Report for High Priority Sites (881 Hillside Area) (referred to as the RI) and the Draft Feasibility Study Report for High Priority Sites (881 Hillside Area) (referred to as the FS)

SLOSKY & COMPANY INC

GENERAL

1 In a number of areas the EA states that potential hazards will be controlled per Job Safety Analysis (JSA) and Operational Safety Analysis (OSA) programs. The EA relies upon the JSA and the OSA to

- o Ensure the safe handling of the ion exchange regeneration chemicals and waste brine (page 5-4)
- o Provide appropriate protective measures for remedial action workers (page 5-10 11 12) including controlling exposures to volatile organic compounds (VOCs) during construction (page 5-10) and protecting against dermal exposures to contaminated soils (page 5 11)
- o Specify dust control measures to limit inhalation exposures (page 5-13) and airborne organic chemicals (page 5-15)
- o Control leaks and spills in the water treatment building (page 5-14)
- o Identify preventive/corrective actions and the responsible parties for accidents (page 5-22)
- o Control worker uptake of contaminants in accidents (page 5-22)

However, since the JSA and OSA plans for the proposed remedial action are not available for review, it is not possible to determine the effectiveness of such plans. How will the public be involved, if at all, in the development and implementation of the JSA and OSA? How will compliance with the JSA and OSA be audited? How will the results of the audits be reported to the public?

2 The EA contains several statements that monitoring will be done to ensure worker safety and the public health. Based upon the results of the monitoring, certain modifications or changes to remedial actions will be taken (page 5-10 11 26). The EA, however, contains very few specifics on how the monitoring and corrective action will be implemented. The EA should include a discussion of the monitoring that will be conducted, the contaminant concentration criteria that will trigger control actions, and the types of control measures that will be implemented.

3 The term "few metals major ions" is not very meaningful (page 1-5) *See 6, PP 1*

WATER QUALITY

1 The document accurately states that the alluvial ground water at the 881 Hillside Area is significantly contaminated by VOCs (page 1-5 and Table 2-1 page 2). The metals concentrations are probably high compared to alluvial

waters in the area that have not been affected by human activity (Table 2-1 page 2-2) The average and maximum ground water concentrations of mercury, 300 parts-per-billion (ppb) and 900 ppb respectively are very high. The selenium values appear high though the nickel and manganese values are not especially high.

Although not stated in the EA, Table 2-1 appears to include data only on those contaminants whose average concentration exceeds the ARARs. A more complete presentation of the metals found in the 881 Hillside Area would be helpful. Will the proposed remedial action be effective in removing the metals (antimony chromium copper iron zinc) that have average concentrations below the ARARs but have maximum concentrations above the ARARs? (The Rocky Flats Cleanup Commission believes the ARARs should be divided by the number of pollutants found.)

2 There is no basis in the EA for accepting or rejecting the statement that downgradient water is characterized by the absence of VOC contamination with the exception of methylene chloride acetone and 1,1-dichloroethene. Inorganic constituents have apparently migrated from the 881 Hillside Area but organic contaminants have not migrated to any appreciable extent (page 1-5).

Later in the EA it is stated that 1,1-dichloroethene has only been detected in one sample downgradient of the proposed location of the french drain and that the methylene chloride and acetone detected were likely laboratory contaminants (page 5-9).

The proposed remedial action seems to assume that there are no contaminants in the ground water downgradient of the french drain so this matter has great significance. What concentrations of methylene chloride acetone and 1,1-dichloroethene are present in the downgradient ground water? What is the environmental and public health significance of these concentrations? Are subsequent remedial actions under consideration for the downgradient ground water?

3 The EA states that It is anticipated that groundwater encountered during construction [of the french drain] will not be contaminated given the location of the drain (page 5-3). This statement seems inconsistent with the statement that methylene chloride acetone and 1,1-dichloroethene have been found downgradient from the 881 Hillside Area (page 1-5).

4 The relationship if any between contaminants in the soil and in the ground water is not thoroughly discussed. Table 2-1 shows that concentrations of contaminants in soils are generally lower than concentrations in ground water on an absolute-value basis however the units of concentration are not directly comparable and the manner in which one hypothesizes the relationship between infiltration- vadose zone transport--and saturated zone transport is important in the design of the remedial action. Have contaminants moved downward from the soil into the ground water or upward from the ground water into the soil or both? This discussion may be in the RI however the EA should contain at least enough information to determine if the soil concentrations are high enough to provide an ongoing source term for recontamination of ground water.

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5 The range of remedial action alternatives considered seems appropriately wide and the discussion in Section 30 of the EA indicates that a reasonable screening of alternatives has been conducted

6 The proposed action of pump-and-treat with subsequent discharge under the National Pollution Discharge Elimination System (NPDES) permitting restrictions seems well conceived. Two aspects of this approach are particularly attractive and suggest a well thought out plan. First the proposed treatment technologies are technically solid and their selection soundly reasoned. The use of ultraviolet/peroxide oxidation is clearly an effective simple and robust technology for destruction of the VOCs. The emphasis on a permanent solution aimed at the environmentally most hazardous materials is well placed both technically and in terms of regulatory compliance. The sequential use of ion-exchange for metals removal indicates an appropriate understanding of the chemistry of the inorganic compounds that require treatment. Second based on experience with another site contaminated with metals and organics in the general vicinity of Rocky Flats the use of a french drain for ground water removal is also a well thought out and proven approach. (The Rocky Flats Cleanup Commission questions whether or not this technology is effective for all VOCs on site such as the methano-halide compounds.)

7 The pump-and-treat strategy is likely to be successful at least within the limits described. This approach should provide for adequate reductions in contaminants to mitigate hazards associated with discharge of the treated ground water. If soils are determined to provide a long-term source the EA retains the option of soil flushing as a contingency.

8 The EA states that The effluent from the water treatment process will be retained in a holding tank and sampled to assure that applicable or relevant and appropriate requirements are met. This water then is surface-discharged into the South Interceptor Ditch that empties into Pond C-2. The water quality of Pond C-2 is again analyzed and if standards are maintained released in accordance with the NPDES permit. The EA should specify what will be done if either the effluent tank water or the Pond C-2 water is found not to meet requirements. (The Rocky Flats Cleanup Commission suggests that the "clean water" be recycled back through the plant to attain zero discharge from the plant.)

9 The discussion of the potentially adverse impacts on water quality due to the proposed remedial action (Section 52) seems complete. The EA states that contingency plans will be developed for safely proceeding if unexpected conditions are encountered.

WATER TREATMENT SYSTEM

1 The EA does not enumerate the chemical-specific ARARs that the treatment plan effluent must meet for discharge (page 3-5). (The Rocky Flats Cleanup Commission believes that the ARARs should be divided by the number pollutants to be treated.)

2 The data presented in Table C-1 (page C-3) on the concentrations of liquid contaminants in the collection tank are not consistent with the concentration of contaminants in the ground water provided in Table -1 (page 2-2).

3 The statement that None of the chemicals to be collected on the ion exchange resins are defined as hazardous materials in shipping regulations needs to be clarified (page 5-26) While the quantities of the chemicals on the resins may fall below the threshold for regulation by the United States Department of Transportation (DOT) a number of these chemicals are regulated as hazardous (if in sufficient quantities) by DOT -2

4 Waste brine is mentioned but it is not shown as a by-product on the flow chart in Figure 3-2 (page 5-4) What volumes of waste brine will be generated and what will it have in it? How will the evaporator solids be disposed (page 5-26)? Is there an environmental impact associated with such disposal?

5 The EA should be consistent in the nomenclature for the influent (collection) storage tanks and the effluent (surge) storage tanks (page 5-4 C 3 C-4 and elsewhere)

AIR QUALITY

1 In general the EA contains the appropriate elements to assess the potential air quality impacts of the proposed action on workers and the public

2 The EA concludes that insignificant air quality impacts would result from the remediation proposal The EA further states that the proposed remedial action is not more detrimental to air quality than other potential remedial options However some findings presented in the EA are not substantiated by data in the document and the EA does not contain adequate information regarding contingencies that could arise *man u*

3 No baseline air quality or meteorological data are identified or summarized in the discussion of the Potentially Affected Environment (Section 40) The EA should contain information on existing ambient air quality wind speed and direction and precipitation frequency to aid in understanding the Environmental Effects of the Proposed Action (Section 50) *man*

4 Section 50--Environmental Effects of the Proposed Action appears to identify all significant potential air quality impacts on remedial action personnel other Rocky Flats workers and the public (The Rocky Flats Cleanup Commission does not believe these impacts have been adequately mitigated in the proposed and Safety Plan) - 1

5 No analysis or substantiation is presented for two important conclusions

Air quality from construction activities associated with treatment facility french drain source well footing drain and associated utilities are small when compared to the normal activity at Rocky Flats Plant (page 5 1) and

During construction National Ambient Air Quality Standards (NAAQS) for particulates as well as the OSHA standards will be met (page 5-1) How will monitoring be conducted to ensure that these standards are not exceeded? Will the monitoring results be available on a real-time basis

6 The approach used in the EA to estimate the dispersion of air contaminants is not very accurate (Section 5.0 and Appendices F, G and I). The air dispersion approach used a simplifying assumption that may not be valid, that the meteorology is homogenous in all directions. The same average wind speed (3 meters per second) was used to calculate the dispersion factors (X/Qs) for all remote locations.

An example of how this approach may result in erroneous conclusions can be found in the discussion of personnel exposures from an accident. The EA states that it is assumed that the highest exposures of (non-remedial action) personnel will occur at the closest occupied building (page 5-21). However, because air contaminants may not disperse uniformly, the highest concentration could occur at other than the closest building.

A more accurate approach would be to perform dispersion modeling for each source for the joint wind frequency/wind speed distributions along with the actual stability class. In that way any high concentrations due to anomalous meteorology would be identified. Without such analysis it is difficult to ensure that all potential impacts are addressed.

7 The air quality impacts for the alternative remedial actions were subjectively reviewed in the EA. Although no supporting data are provided, the general conclusions regarding air quality impacts of alternatives appear to be valid. (After having reviewed the more detailed Health and Safety Plan, the Rocky Flats Cleanup Commission does not believe the impacts have been adequately mitigated.)

8 Table 2-1 (page 2-2) indicates that organic contaminants have been measured in the soil at the 881 Hillside Area, although the depth of the contamination is not specified. The statement "Sampling has demonstrated that volatile organic chemicals are present in the 881 Hillside Area only at or below the water table" (page 5-1) seems inconsistent with the data present in Table 2-1 (page 2-2). The conclusion that since organics are not in the soil, VOCs will not be released by the construction activities may also be invalid (page 5-1 and 5-2). A similar statement also appears on pages 5-3 and 5-4 of the EA.

9 The EA states that construction operations will be suspended if the wind velocity exceeds 15 miles per hour (page 5-13). It would be useful to know the frequency and duration of wind speeds at Rocky Flats exceeding 15 miles per hour.

10 The calculation of the source term of fugitive dust assumes that the largest dust cloud likely to be maintained during excavation is a cross-sectional area four meters high and ten meters long (page F-3). The basis for this assumption should be explained, given that the trench for the french drain will be 640 meters long.

11 The EA states that the formula for the Pasquill Stability Class D (neutral) was used because that stability class was reported in the FEIS to be the most prevalent, occurring about 52% of the time (page I-1). It would be useful to know what stability classes comprise the remaining 48% of the time.

SOILS/VEGETATION

1 If the EA is intended to be a stand alone document, Section 1.2 should have a much more thorough description of the nature and extent of contamination of the 881 Hillside Area. Following are examples of the types of additional information that would be useful.

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- o How and when did the area become contaminated? What volumes of material are believed to be the sources of contamination?
- o A site map drawn to scale and showing soil sampling and ground water monitoring locations
- o Are the remedial action alternatives discussed in the EA the same as those assessed in the Draft Feasibility Study?

2 While there may be thriving vegetation on the 881 Hillside the vegetation itself may contain elevated concentrations of hazardous substances particularly metals. Uptake of hazardous substances in plants may affect wildlife. Has this potential problem been assessed? (The Rocky Flats Cleanup Commission requests any information or research that may have been conducted on the cattle that previously grazed on the property.)
3 What is meant by normal erosion control measures (page 5-4)? If there is a risk of releasing contaminated sediment control measures should be spelled out.

4 The EA states that since none of the rodents insects or vegetation [on the 881 Hillside] are endangered or threatened they will quickly reestablish their populations in the disturbed areas (page 5-5). The fact that a species is not threatened or endangered does not mean that it will be able to quickly reestablished itself. Disturbed areas should be revegetated.

5 What is meant by relatively stable soil in reference to the 881 Hillside Area (page 4-3)?

RISK ASSESSMENT

1 The risks from fugitive dust may be considerably greater than stated in the EA. Appendix J indicates that the chronic intake of contaminated soil is 25 milligrams per day (mg/day) for members of the public (page J-1). However the United States Environmental Protection Agency guideline for chronic soil intake is 200 mg/day for children under six years of age and 100 mg/day for individuals over six.

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Appendix J also states that it is assumed that special protective measures and training of the remedial workers will reduce fugitive dust exposures to 5 mg/day. What is the basis for this assumption?

2 The risk assessment assumes that the water released from the treatment process will contain both VOCs and inorganics at the minimum detection limit.

(page 5-20) The EA does not specify how the detection limits relate to the ARARs (that are not specified in the EA). Presumably the treated water could be above the detection limits and still be in compliance with the ARARs. By using the detection limit rather than the ARARs in the risk assessment it seems that risks have been understated. This issue arises in Appendix C (page C-1 and C-2) and Appendix E (page E-1). *even if AR d*
no exactly the opposite is true.

3 The use of average contaminant concentrations is generally appropriate in long-term risk assessments. For a short-term remedial action such as the 881 Hillside consideration should be given to the use of maximum contaminant concentrations to bound the risks to the remedial action workers (page C-1 and D-1).

4 The EA states that during construction both the NAAQS and the OSHA standards for particulates will be met (page 5-1). If this is the case the risks from airborne dust will be significantly less than estimated in the EA based upon 10 000 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). The primary NAAQS are $75 \mu\text{g}/\text{m}^3$ on an annual mean geometric basis and $260 \mu\text{g}/\text{m}^3$ on a 24-hour average basis not to be exceeded more than once a year while the OSHA standard is $15\,000 \mu\text{g}/\text{m}^3$ for total particulates and $5\,000 \mu\text{g}/\text{m}^3$ for respirable particulates.

5 Appendix H presents the transportation risks associated with the proposed remedial activities on a per-shipment basis. If these unit risks are summed for the total number of estimated shipments the total of the traumatic transportation risks is much greater than the environmental health risk estimates. This situation is common in environmental cleanup projects.

RADIATION PROTECTION

1 There is an error in the equation used to calculate the total intake of radionuclides (page F-2). The Exposure Duration Adjustment (EDA) of 8 out of 24 hours (8/24) is redundant since the Adult Breathing Rate (BR) used is already for an eight-hour shift. This error results in the underestimation of radionuclide intakes by a factor of three. *correct*

2 The calculation of the concentrations of air contaminants assumes that the concentrations in the fugitive dust are the same as in the soil. At a minimum this assumption should be explicitly stated. What is the basis for this assumption? This assumption may not be conservative concerning health risks from fugitive dust (page F-1).

3 There is confusion regarding the concentrations of uranium in ground water in Table 2.1 (page 2-2). Apparently the average and maximum values are reversed in the table. We have also had difficulty replicating the conversion from micrograms per liter to picocuries per liter.

4 The EA states that operations will be suspended if alpha radiation exceeds $0.05 \text{ pCi}/\text{m}^3$. Does this figure refer to gross alpha radiation? How

will monitoring be conducted to ensure that this level is not exceeded? Will the monitoring result be available in real-time?

5 The EA states that uranium was the only radionuclide occurring at concentrations above the estimated background (page 1-5) What was the estimated background concentration for uranium? How was the background concentration statistically determined? Where were the background samples taken? The uranium concentrations should be reported as U-238 or U-natural depending on measurement technique What statistical tests and what confidence levels were used in the comparison of the uranium concentrations at the 881 Hillside to the background concentrations?

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6 The EA states that the strong basic unit to be used to remove uranium from the ground water will be disposed when its activity reaches a predetermined level (page 3-5) What is the predetermined level? The EA should present calculations of the expected lifetime of the unit. *not than 30 years*

7 In Figure B-1 it should be specified if the risks given are annual risks or lifetime risks (page B-4) If this figure contains lifetime and annual risks it is misleading

Rocky Flats Cleanup Commission

738 WYN ODP SUITE 302
DENVER, COLORADO 80202
(303) 298-8000

Board of Directors

President
Joe Tempel
Denver 757-9931
Vice-President
Joe Goldfield, Ph.D.
Denver 321 7276
Secretary
Paula Eloffso -Gard
Arvada 420-2967
Treasurer
Greg Marsh
Arvada 421 3383
Admin. and Asst.
Denver 333-9714
Gale Biggs, Ph.D.
Boulder 494-4288
Melissa Ph.D.
Lakewood 986-2371
Eugene Demay, O.D.
Gold 642 311
Eva F. H. J. D.
Boulder 444-81 3
K. M. R. Gric
Westminster 400-12
S. H. T.
Denver 830 7295
William Kempe, Ph.D.
Denver 238 2148
Ken L. H. St. M.
Denver 333-307
Tom R. H.
Denver 832-4508

RESPONSE TO COMMENTS RECEIVED FROM E G G IN A LETTER DATED
JULY 11 1990 REGARDING QUESTIONS THE RFCC RAISED AT A BRIEFING
ON HILLSIDE 881 ON JUNE 14 1990

Question The RFCC agrees with your assumption that all
plutonium is respirable even though not all particles
are respirable and plutonium decreases with depth. For our
information could you please send us any research which shows
the relationship between concentration and depth?

Question 2 E G G's comment did not address Dr. Biggs' concerns

The calculation included the dispersion from the source to the
monitoring equipment. This was estimated by Dr. Biggs at about an order of
magnitude reduction in concentrations. A review of dispersion theory shows
that values vary from a factor of six to eleven depending on the stability
class. Thus assuming a factor of ten is within a conservative range.

The letter stated "The detected daily average concentration for PM_{10} is
 0.024 mg/m^3 . Is this an average of all numbers or is it the maximum value
observed? It is assumed to be a maximum value since that is the accepted way
of presenting particulate data for analysis. Clarification is requested on
this point.

The worker is located at the point of source release while the monitor is
several hundred feet away. Thus the monitored value of 0.024 mg/m^3 would be
 0.240 mg/m^3 at the worker's location (using the factor of ten reduction
between the worker and the monitor). It follows that the worker is being
exposed to values higher than the NAAQS (which is 0.150 mg/m^3). This value is
60% over the standard. If the value of 0.024 mg/m^3 is an average rather than
an extreme value then the calculations could be considerably worse.

Several other clarifications are being requested about this measurement.
We would like the meteorological conditions of the day on which the monitored
value was obtained. A detailed map showing the location of the construction
activity and the monitors is needed to define the dispersion during the
monitoring period. Elevations of the area are also important since the
activities may not have been occurring at the same heights.

The above calculations indicate that worker protection is necessary. We
would like to request you provide us with a detailed plan for providing the
necessary protection for both the equipment and the workers.

Rocky Flats Cleanup Commission

38 WY OOP SUITE 302

DENVER, COLORADO 80202

(303) 298-600

Board of Director

President

Joe Timpel

Denver 757 9931

Vice-President

Joe Goldfield, Ph.D.

Denver 321 7276

Secretary

Pula Eloffson-Gard

Arvada 402 2967

Treasurer

Greg Mahan

Arvada 421 3383

Adm. Anderson

Denver 333-9714

Gale Biggs, Ph.D.

Boulder 494-4288

Merica, Ph.D.

Lakewood 986-2371

Ege Demayo, O.D.

Gold 642 3117

Eger, H.J.D.

Boulder 444-8113

Kim R. Ginc

W. 466-121

S.H.

Denver 830 7295

William K. Mpe, Ph.D.

Denver 238 2148

Ken L. Hitt, M.D.

Denver 333 3000

Tom Rahn

Denver 832-4508

Question 3 The RFCC still has not received copies of the final Health and Safety Plan. The six copies we received from Terry Smith were not complete. Because this document is of greatest concern to the RFCC we request fifteen copies for each of our board members.

Question 4 The RFCC has since provided Wanda Busby with the reference material on the resuspension of soil from USGS. We requested a copy of the study that EGG's contractor conducted on the technologies to control dust during construction and still have not received a copy. Because this is also of utmost importance to the RFCC we would also like fifteen copies of this document. Dr. Biggs also requested information on wind speeds which he has not received.

Question 5 Dr. Biggs has provided EGG with additional information on the best method for the RFCC to know if our technology is being implemented. Rocky Flats will implement this technology.

Question 6 The RFCC would like to know if you have investigated the potential health effects suggested by Mr. Goldfield and determined it applicable to Rocky Flats.

Question 7 The RFCC still believes that the workers are not being fully protected during construction activities associated with remediation at Hillside 381. Mr. Goldfield has provided the additional analysis below which substantiates our concerns.

The calculation that appears in the subject letter purports to show that the respirable concentration of plutonium in the breathing zone of workers is within the maximum Concentration Guide for Public exposure. The calculation is based on a number of unwarranted assumptions that are far from a conservative analysis of the hazards to which workers are exposed. The calculation neglects hazards to which the workers and their family will be exposed. The assumptions and their critique follows:

1. 48 pCi/g is assumed to be the maximum plutonium level in any surficial soil sample. That is probably based on 19 samples that were taken on the 881 hillside and a copy appears in my essay "881 Hillside Cleanup" July 6, 1990. The assumption is that the highest plutonium concentrations are found on the soil surface and the highest possible concentration of plutonium was accidentally found in 19 (too few to prove to be representative) randomly collected samples. Both assumptions are unwarranted. My same report (see above) quotes a reading taken by the Department of Health 150 yards E-SE of the 903 pad and in the drainage area seeping towards the 881 hillside was 186.5 pCi/g of Pu. Also due to seepage and the presence of possible pockets of discarded waste it is not possible to assume that surface concentrations are higher than underground concentrations of plutonium.

Conclusion--It is unwarranted to assume that 48 pCi/g is the highest concentration that will be encountered in excavating soil in the 881 Hillside

2 The assumption that the concentration in the surface soil is the same as the concentration in the respirable fraction that is suspended in the air is unwarranted Carl Johnson, in his report in Science August 1976

Plutonium Hazard on the Surface of Soil reports that his estimate of background levels in the respirable fraction of surface soil (particles equal to or less than 5 micrometers in size) is 0.45 dpm/g (disintegrations per minute)--5.5 times as great as the level of 0.08 dpm/g for total soil

clear and to values

It must be assumed that the respirable fraction of soil has a concentration of plutonium that is 5.5 times as great as that in surface soil samples

3 According to OSHA regulations the maximum allowable respirable concentration of Inert or Nu sance Dust to which workers may be exposed is 5 mg/m^3 . It is unacceptable to subject workers to concentrations of respirable dust of 6.25 mg/m^3 . That interdiction is especially unacceptable where the air can contain at the minimum 48 pCi/g of soil 130 times as high as background and of which the respirable fraction has a concentration that is 715 times as high as background. These numbers do not even account for the fact that the highest concentration of plutonium in 881 hillside soil is yet to be measured and does not account for the seepage of plutonium from the 903 pad area

The measurement of air borne dust concentration is simultaneous with the exposure of workers. If a measurement that exceeds the allowable is taken what can be done to rescind the worker exposure? Will the workers be supplied with protection if any reading above 6.25 mg/m^3 is obtained? According to OSHA regulations that is the way such a reading must be treated

4 There are numerous references in the literature to the incidence of disease caused by contaminants brought home on the clothes and in the vehicles used by workers. This disease has been found in the children of workers exposed to lead and to the wives and children of asbestos workers. Insufficient care in supplying construction workers with clothing change rooms and masks may be sentencing their wives and children to the ravages of disease caused by exposure to plutonium that greatly exceeds background levels